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Validation Study of the Training Activities of Alberta Public Safety Services

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VALIDATION STUDY

OF THE

TRAINING ACTIVITIES

OF

ALBERTA PUBLIC SAFETY SERVICES

L.J. Byrne
November 1990

A project funded jointly by Emergency Preparedness Canada and Alberta Public Safety Services.

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VALIDATION STUDY

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EXECUTIVE SUMMARY

In January 1990, Alberta Public Safety Services (APSS) approved a cost-benefit type of validation study of its training activities. This document is a report of that study -- whose directive is at Appendix A.

The report focuses on three aspects of the training activities:

a. Training conducted by the Training Division (TD) in support of emergency operations and planning (EOP);

b. Training on the transport of dangerous goods (TDG); and

c. Training conducted by the Disaster Health Services Branch (DHS) and the Disaster Social Services Branch (DSS).

The study is concerned primarily with the first aspect as:

a. TDG activities have not been the subject of a cost-benefit study; consequently, only a cost-effective view is presented for TDG training;

b. DHS training costs have been combined with early benefit estimates to yield a cost-benefit ratio for this training of 5.2; and

c. DSS activities are the subject of a concurrent cost-benefit study; the cost-benefit of this training will be determined in conjunction with that study.

The benefits from EOP training was found, based on a previous cost-benefit study of the Disaster Field Services Branch, to be $637,500. Allowing for the proportion of the training costs needed to support EOP training and the share of the APSS overhead yielded a cost of $457,000. The resulting cost-benefit ratio is 1.4.

The study established also that the number which should be trained for EOP roles is 839 - a number significantly larger than those currently being trained. Possible priorities for this training have been calculated on page 14.

Other points which the study brought out were:

a. There may be scope for combining some APSS training with that given in fire training facilities;

b. The different types of disasters which may be experienced by various communities could be kept in mind in the allocation of spaces and curriculum design;

c. Consideration could be given to the updating in the training given to individuals who are no longer in responsible positions but who could serve in an emergency;

d. Estimates have been made of the national training load for EOP type training; in addition, it is proposed that the federal training facility provide the training specific to large cities; and

e. The available evidence indicates that current TDG training is generally cost-effective. Proposed changes would give greater relative emphasis to On Job Training (OJT) and exercises.

VALIDATION STUDY OF THE TRAINING ACTIVITIES

I. INTRODUCTION AND BACKGROUND:

In January 1990, Alberta Public Safety Services (APSS) approved a validation study of its training activities. The study was to take the form of a basic benefit cost analysis, with additional consideration being given to certain other topics.

This document is a report on that study. As a basic reference, the study directive is attached as Appendix A.

This project was funded jointly by Emergency Preparedness Canada, and Alberta Public Safety Services. The study was conducted by L.J. Byrne, consultant, who operated under the guidance of a steering committee consisting of:

Mr. Mark Egener, Managing Director, Alberta Public Safety Services
Mr. Eric Shipley, Director General, Plans, Emergency Preparedness Canada

Training Activities

The training activities conducted by APSS cover a wide range of topics and are the focus of a significant portion of its overall program.

For the purpose of this report, the concern is on four aspects which encompass by far the largest portion of these training activities:

a. Training conducted by the Training Division (TD) in support of emergency planning and operations; essentially, the type of operations with which the APSS Disaster Field Services Branch is concerned. This will be referred to as Emergency Operations and Plans (EOP) type activities in this report. (The specific courses considered in this category are listed in Appendix D.);

b. Training conducted by the TD in support of the Transportation of Dangerous Goods (TDG) program;

c. Training conducted by the Disaster Health Services Branch (DHS); and

d. Training conducted by the Disaster Social Services Branch (DSS).

This report concerns essentially the first two items. The following paragraphs establish the validity of this approach and report the results and/or status of work on the DHS and DSS training activities.

Disaster Health Services

The DHS is a highly cost beneficial program (Reference 1). This is due to an annual benefit of $1.09 million, and an annual cost of $375,000. Of the benefits, $1.06 million is derived from the training activities. For the cost, 50% or $187,500 is ascribed to training.

In conducting this training, which the Branch does itself, the DHS uses TD facilities to the extent of 253 trainee days. DHS is a client of the training school, as such it should be able to choose the most economical means of providing the facilities. From discussion with those knowledgeable in this area it has been determined that this "economical" cost would be $170 for 20 trainee days. On this basis the facility cost for DHS should be $\frac{253}{20}$ X 170 = $21,505.

Adding this to its own program costs and combining this with the noted benefits yields a cost benefit ration of 5.1 for DHS training activities.

Disaster Social Services

A cost benefit study of the DSS program is currently underway and should be completed in 1991. At that time, a cost benefit for the DSS training will be calculated in a fashion similar to that used for DHS.

Noting the above, and that a cost benefit study of the TDG program lies in the future, the current study focuses on two aspects:

a. A cost benefit study of field services operations type training as conducted by the TD; and

b. A complimentary cost effectiveness study of the TDG training. This discussion, also, establishes the relevance of this study to the determination of the cost benefit of the TDG training activity.

II. STRUCTURE OF THE REPORT:

The remainder of this report is divided into six major sections. Section III describes the methodology which was used in this study. Essentially, this methodology creates a framework or structure for the calculation of benefits and costs. Section IV gives the numerical results of the calculations of the benefits and of the relevant TD costs and then proceeds to derive a benefit cost ratio for this segment of the training activities. Section V presents a discussion of certain aspects of the training which emerged in the course of the study.

Section VI develops an optimal model of this segment of training activities. Section VII discusses the relationship of these findings to the training conducted at the federal level. Section VIII gives the cost effectiveness assessment of the TDG training. Section IX then summarizes the major conclusions.

III. METHODOLOGY:

General Approach

As noted, the validation study has taken the form of a benefit-cost study where both the benefits and costs are viewed from the perspective of the provincial government.

In a benefit-cost study, an essential requirement is to identify quantitatively the factors which determine what the benefits would be, and indicate how those factors relate quantitatively to one another.

In the training activity study, this is generally meant that it has been necessary to determine:

a. The benefits which have been attained from the supported emergency operations; and

b. That portion of the benefits which could be ascribed to the training.

The problem then resolves itself down to determining the quantities involved in the above factors. The basis of the study was a cost benefit assessment of the Disaster Field Services sub-program carried out in 1989 (Reference 2). This study sufficed to establish the benefits and the portion of the benefits which could be ascribed to the training.

The relative worth of various forms of training and the insights into the scope and type of training which would be desirable had to be found by use of the Delphi technique.

Delphi Method

Cost-benefit analysis requires the quantitative assessment of both the cost and the benefits which result from a program. There is unfortunately, but very

understandably, a general lack of objective date on which to base estimates of these benefits in the case of the emergencies with which the Disaster Field Services Branch is concerned. This is particularly the case in smaller communities which have only limited resources with which to deal with such situations.

Nevertheless, it can be argued that there is a pattern of benefits which could support a benefit cost assessment. The problem is that this pattern exists only in the collective minds of those involved in the emergencies. This, however, is exactly the type of problem for which the Delphi method was developed.

The Delphi method was developed by the Rand Corporation in the U.S. in the 1960's to study topics in which there is knowledge but little available data.

The genesis of its development was the need to create a method with which to:

a. Tap the knowledge and experience of individuals who have had the opportunity to become familiar with a situation;

b. Draw on that experience in such a way that the knowledge and experience of all of these individuals is incorporated;

c. Build on that knowledge and experience, by carefully challenging these individuals with opinions and perspectives of those with similar experience, permitting them to reflect not only on their own insights, but, also, to incorporate those of others; and

d. Elicit from this body of knowledge, quantitative estimates of the situation under study.

The Delphi method meets these requirements by operating in the following manner:

a. The participants are asked to make their estimates of the quantities which are of interest. They are asked to do this individually and anonymously. This facilitates the free expression of views by preventing one, or a few, individual(s) from dominating the exchange of views;

b. Participants are also asked to express their views on the factors which have led to their estimates. These views are as important as the quantitative estimates since they record the underlying influences;

c. These estimates and arguments are then studied to determine consensus and divergencies;

d. A synopsis of the estimates and arguments is then circulated to the participants for consideration, possible revision and comment; and

e. In some cases it may be worthwhile to carry out multiple cycles of estimates and opinions, followed by reflection and revision. (This was not necessary in this study.)

Since its initial development the Delphi method has been used in a large number of studies. In itself it is the subject of an extensive literature within operational research. It is now an accepted and frequently used technique for developing the best estimates for factors in studies which cannot, or can only partially, be established in other ways.

In this study, the Delphi method plays an important role since it is the source of several important numerical factors. In each case, however, the values obtained have been checked against the literature to yield at least a gross verification of accuracy.

A particular feature of the use of the method in this project is that it has been applied in such a way that participants are not afforded a "free lunch" - for example, if something is given a high value, then a price is also assessed - if not explicitly, at least implicitly, by requiring another item be given a lesser value.

Further details on the Delphi Exercise are given in Appendix C.

Scope of Costs and Benefits

Another methodological aspect of the treatment of costs and benefits is that this study is designed to determine the peacetime benefits and costs of the APSS program from the perspective of the Government of Alberta - for example, the benefits are those received by the Alberta Government representing the public as a whole. Similarly, the costs are those incurred directly by the provincial government. This means, for example, that only the costs incurred by the Disaster Field Services Branch in relation to its program are counted. The costs to the municipalities by themselves are not considered; but correspondingly, only the benefits to the provincial government are considered.

IV. NUMERICAL RESULTS:

Overall Benefits

Reference 2 is a cost-benefit study of the Disaster Field Services Branch. That study established that the monetary value of the benefits which can be ascribed to the training in EOP type activities is $637,500.

This level of benefits can be calculated from the Reference 2 figures if allowance is made for the following factors:

a. The very largest benefit from these EOP activities come from amelioration of non-emergency accidents - which are very predominantly highway accidents. However, these benefits are <u>not</u> due to APSS <u>training</u> since the training in highway rescue (for example, the jaws of life equipment) are given by the manufacturer or by the fire services;

b. 60% of the benefits from EOP type activities are due to the training received by the municipal personnel - versus 40% for the Disaster Field Services Branch activities proper. Accordingly, the Disaster Field Services program benefits of Reference 2, after having deducted the non-emergency accidents benefits, must be increased by 50% (for example, 60/40) to find the training benefits.

c. Specifically, this means that the $425,000 benefit identified on page 23 of Reference 2 for Tornadoes, Sour Gas (releases), Floods and Morale must be increased by 50% to $637,500.

Training Costs

The training costs of the EOP type activity training comprised four components:

a. Facilities Costs - obtained from Reference 4, overall (for example, for APSS training as a whole) costs $349,000;

b. Personnel Costs - which for all TD activities costs $428,750;

c. Public Service (PS) Travel - for example, travel by APSS staff to conduct activities such as non-central training, costs $19,000; and

d. Non-Public Service (NPS) Travel - which covers travel and accommodation costs to encourage attendance by trainees, which was $49,000.

The EOP-type activity component for these costs was calculated by allowing for the percentage of total trainee days, as given in Reference 6, required for this form of training both centrally and on extension courses outside of Edmonton. The proportion of these activities calculated in this way was:

a.	Facilities and NPS Travel	-	32%
b.	Personnel Costs	-	39%
c.	PS Travel	-	36%

Combining these costs proportions with the overall cost figures (*) yields the following EOP type training costs:

a.	Facilities	-	$100,000
b.	Personnel	-	$167,000
c.	PS Travel	-	$ 7,000
d.	NPS Travel	-	$ 16,000
	TOTAL		$290,000

* Allowance was made, also for a reduction in the facilities cost figures due to the imputed contribution of the DHS and DSS programs; this allowance was the sum of $21,500 and $14,500.

To this must be added EOP training's portion of the APSS overhead costs of $1.5 million. A charge proportional to the share of the total operational budget, which is roughly $2.6 million, has been made:

$$\frac{290,000}{\$2.6 \text{ Million}} \times \$1.5 \text{ million} = \$167,000$$

Thus the total costs for this training is:

Direct	$290,000
Indirect	$167,000
	$457,000

Benefit-Cost Ratio

Combining the benefits and costs figures yields a benefit/cost ratio of:

$$\frac{\$637,500}{\$457,000} = 1.4$$

Numbers to be Trained

Two prime factors developed in the Delphi Exercise contributed to the calculation of the annual numbers to be trained:

a. The number of individuals needed in the various EOP type activity positions as identified in the Delphi exercise. These positions were defined as follows:

   i) Elected Officials
   ii) Emergency Operations Supervisory Personnel
   iii) Rescue Personnel
   iv) Senior Fire Officers
   v) Senior Police Officers
   vi) Public Information Officers; and

b. The average length of time which these individuals could be expected to serve in their positions.

The annual training requirement for EOP-type training could then be found by dividing the number of each type of individual who required training by the average service.

In numerical terms the components of the calculation are as follows:

Types of Positions	Cities (16)	Towns & Counties (138)	Villages & Districts (163)	Total Numbers (Note 1)	Average Service Period (yrs)	Numbers to be trained Annually (Note 2)
Elected Officials	8	3	2	868	4.2	207
Emergency Operations Supervisory Personnel	8	4	2	1006	7.3	138
Rescue Personnel	24	8	3	1977	8.3	238
Senior Fire Officers	8	3	2	868	8.3	105
Senior Police Officers	5	2	1	519	5.0	104
Public Information Officers	4	2	1	503	10.7	47
TOTAL						**839**

Notes: (1) Found by multiplying the number required for each type of municipality by the number of municipalities - the bracketed figure - and summing.

(2) Found by dividing the Total Numbers by the Average Service Period.

Training Priority

Since the numbers to be identified in this study as requiring training annually are significantly larger than those which are currently trained it was considered worthwhile to attempt to develop a guide to a possible allocation of resources which might be devoted to such increased training.

The training priority analysis was based on the following reasoning:

a. Priority should follow from a relative benefit cost approach for each position;

b. The relative benefit in this case can be equated to the relative worth of training for each function; and

c. The costs, on the other hand, can be equated to the number of training days required for the function to be adequately staffed. In other words, the numbers to be trained multiplied by the training time.

The relative worth of training for each function was numerically estimated in the Delphi Exercise. The training time was taken from the length of the relevant courses and the estimated numbers required has already been discussed. These figures are shown below.

Position	Relative Worth (Note 1)	Relative Cost (Note 2)	Numbers	Total Cost (Note 3)	Relative Worth/Cost (Note 4)	Rank
Elected Officials	7	3	207	621	1	6
Emergency Operations Supervisory Personnel	32	7	138	966	3.3	3
Rescue Personnel	19	2.5	238	595	3.1	4
Senior Fire Officers	21	5	105	525	4.0	2
Senior Police Officers	12	5	104	520	2.3	5
Public Information Officers	10	4	47	188	4.5	1

Notes: (1) The relative contribution (out of a total of 100) which each type of position made to the success of emergency operations. Found from the Delphi exercise.

(2) Estimated training time for each individual in each position.

(3) The product of the relative cost and the number of individuals on whom that individual training cost is expended. This is the cost of providing the complement of individuals who, together, yielded the relative worth.

(4) The relative worth divided by the total cost and "normalized" by multiplying by 100, for example, for Elected Officials this is:
$\frac{7}{621} \times 100 = 1$

It may be worthwhile to underline the influence of the various factors in this calculation by giving some exposition of the way that they operated in the case of the top and bottom results:

a. The Public Information Officers rate highly since although their relative worth is low, this is more than offset by the relatively small numbers requiring training; in other words not many required training each year in order that the function may be executed. The "cost" of training (a four day course) is a relatively neutral factor; and

b. For the Elected Officials, although their training "cost" is relatively low (a three day course), this factor is offset by the combination of a relatively quite low estimated worth and the need to train a relatively large number each year.

It is worth noting, also, that Senior Fire Officers, Emergency Operations Supervisory Personnel, and Rescue Personnel are not radically different in their relative benefit cost.

The question, then becomes: "How should those figures be used to establish training priorities"; or to put it in other words, "how should they be used to determine which training should be reduced if full funding is not available". The difficulty in answering this is that even though all of the functions are not of equal worth, they are all required to some degree. (One response which is not valid, therefore, is to simply eliminate all training for lower rated positions until the budget can be accommodated.) Manpower studies in related fields have shown, however, that an optimal reduction pattern can be found if the reductions in each area are proportional to the reciprocals of the relative worth figures.

The implication of this is that the reductions in the numbers trained from an ideal level should be distributed amongst the individual positions in the following proportions:

	Reduction in Numbers
Elected Officials	41
Emergency Operations Supervisory Personnel	12
Rescue Personnel	24
Senior Fire Officers	8
Senior Police Officers	13
Public Information Officers	3

(This can be interpreted as saying that each 100 reductions in the numbers trained should be divided as above.)

A caveat to this is that, for any given municipal jurisdiction, the number trained for any one position should not be less than one half of those required.

V. DISCUSSION:

Training of Fire Officers

The relationship between the APSS training given to Senior Fire Officers and to volunteer firefighters bears some examination. Those familiar with the EOP type activities rate the contribution of Fire Officers quite highly. On the other hand, it would seem that the very largest part of the contribution which Fire Officers make to the success of an EOP type operation is due to their fire training <u>per se</u>. To put it another way, their "normal" training gives them a fair degree of disaster training.

Training of Police Officers

In a similar fashion, Police Officers are viewed as having received the major portion of the training relevant to disasters in the course of their regular training. In addition, the Police are not seen as having as important a role in disasters as do Fire Officers.

Effect of Disaster Type

However, both the perceptions of the worth of Police Officers in these operations and of the Elected Officials is affected by the type of operation in which they might become involved. Where the emergency is caused by a relatively slowly developing situation - such as in a flood - Elected Officials and Police are relatively more important since a good deal of the operation concerns the displacement of families and individuals. This is a point that may be worth keeping in mind in considering the allocation of spaces within the training schedules; and, perhaps, in the design of the curriculum for Elected Officials and Police.

Independent Estimate of Benefits

A cross check on the benefits derived from this type of training activity can be provided by calculating the worth which the communities themselves impute to the training. This calculation was done under the following assumptions:

a. That the individuals concerned on the average are worth to the communities $140/day. This is a reasonable conservative figure which equates to an annual worth of $35,000;

b. That the time made available by the municipalities is only for central courses on the assumption that the extension courses are given in the evenings. Again, this is a conservative estimate; and

c. That the values given in the Delphi Exercise for the monetary value of various courses (for example, the tuition values), are reasonable estimates. (See Note 1 of Appendix E for a listing of these values.)

Based on these assumptions the imputed value of the time invested can be found by multiplying the $140 by the course length and then adding to it the tuition value for the numbers calculated. On this basis the imputed benefits from this type of training are roughly $770,000. This is not far off the calculated benefit.

Similar U.S. Study

A study for the (U.S.) Federal Emergency Management Agency (FEMA) was examined in the course of this study (Reference 5). That study did not have available to it a benefits-cost assessment of the field activities of those who had been trained - in comparison with this (Canadian) study. The study for FEMA assessed effectiveness in terms of an "emergency readiness" scale. On this basis, it assessed course impacts at the local level at 73% (where 100% would be perfection). This score was almost uniform across all courses. These numerical results could be described, therefore, as reflecting favorably on the training. The uniformity of the assessment is, however, somewhat disturbing.

Possible Reserve of Personnel

An additional aspect which the Delphi Exercise brought out is that there may very well be a considerable reserve of trained personnel within the community who have held the types of positions which are considered in this study and still reside in the community. Appendix B gives the estimates for the probability of these being available for the various types of positions.

It may very well be that consideration should be given to the topic of supplementary training or refresher training for such individuals.

Training Methods

Not surprisingly when the topic of other forms of training was raised in the exercise, On Job Training (OJT) and Correspondence Training rated considerably below formal instruction in the judgements of worth. Specifically, OJT was rated at roughly 65% of the worth of formal training and Correspondence Training was rated at roughly 40%.

There was, however, a very considerable emphasis in all of the responses on the worth of exercises to reinforce and give another perspective to training.

VI. OPTIMAL MODEL:

On the basis that:

a. The pattern of disasters in Alberta is reasonably representative; and

b. The municipal structure, service lengths and disaster organizations are also representative:

the numbers to be trained annually for the positions studied in this document per million population and nationally are estimated to be:

	Per Million	Nationally
Elected Officials	86	2219
Emergency Operations Supervisory Personnel	58	1496
Rescue Personnel	99	2554
Senior Fire Officers	44	1135
Senior Police Officers	44	1135
Public Information Officers	20	516

VII. RELATION TO FEDERAL TRAINING ACTIVITIES:

There was a general sense that the continued use of the courses at the Emergency Preparedness Canada (EPC) College, Arnprior, Ontario, was quite worthwhile. Prime factors which contributed to this perspective were that:

a. Arnprior offered certain specialized courses (for example, Emergency Planning for School Boards) which would not otherwise be readily accessible;

b. Even on those courses which closely matched ones given in Edmonton by APSS, it was valuable to have parallel courses which would permit both provincial and federal trainers to compare approaches and methods; and

c. There was merit in being able to exchange views with students and instructors from other provinces.

Emphasis

In one aspect of training it was judged that the training at Arnprior and at Edmonton could be complementary: this was in addressing the concerns of large cities. For example, Edmonton or Calgary probably have more concerns in common with Winnipeg than they do with Lethbridge. It is arguably the case that Arnprior should provide the common site for the training specific to large city needs. This would permit APSS to focus on training specific to smaller municipalities.

Numbers to be Trained

As with Alberta, it should be emphasized that the numbers given in the Optimal Model section (Section VI) are for EOP type activities only. They do not cover the full range of emergency preparedness training. Nor, with even EOP activities, do they necessarily cover the in-depth training which may be required by a national cadre of specialists.

VIII. TDG TRAINING:

In this study, the cost effectiveness of the TDG was studied only from the standpoint of the execution of the current set of courses. It was judged that the question of the type of courses and their duration would be best addressed in a cost benefit study of the TDG activity as a whole.

Inspectors

The Delphi Exercise as conducted in this training study determined that a cost effective form of both the Facilities and On-Highways Inspector's courses would take roughly the same amount of time as at present, but would have the following proportions of forms of training:

i)	Formal (classroom)	-	45%
ii)	Exercises	-	25%
iii)	On Job Training (OJT)	-	30%

In the case of the On-Highways Inspectors course the OJT component could well lead to a longer overall cost length - possibly one of five days duration, versus the current two and a half.

The rationale for the foregoing balance was:

a. The recognition of the necessity of formal instruction in the fundamentals of the topics, but with a reduction or elimination of the history of the TDG and some of the background;

b. Exercises on individual aspects during the formal phase are a necessary means of solidifying and illuminating the formal training;

c. OJT is a training method which is complementary to the other two in that it shows the reality of the "best practices" application of the training; and

d. A subsequent overall exercise can check and solidify all of the above.

In all of this, the three aspects should be considered in an integrated fashion such that they reinforce each other.

In terms of additional material, the following topics warrant some greater emphasis:

a. Legal Procedures - and their basis and laws, regulations, codes and jurisdictions; and

b. On-site Actions - enforcement, cleanups, waste disposal and interviewing.

TDG Training of Provincial Employees

This form of training was considered quite worthwhile - leading to an estimated halving of accidents. As it is clearly quite difficult to make an estimate of this numerical value, it should be viewed as only indicative. (It is proposed that this estimate be checked in a subsequent cost benefit study of TDG as a whole.)

The effectiveness of the training could be increased with greater emphasis on action in case of accidents, including use of special equipment. The degree to which such an increase would be practical would depend on the cost and commonality among departments of the type of accidents and equipment.

DG Awareness

The current form of this course seems close to the mark. Consideration could be given to somewhat greater attention to each local setting, while recognizing that with current transportation methods and patterns every community could be faced with almost any type of product.

IX. CONCLUSIONS:

1. The training activity of APSS is cost beneficial to the following degrees:

   a. DHS - 5.1:1; and

   b. EOP Type Activities - 1.4:1.

(The results for DSS will be reported in the context of the DSS cost benefit study.)

2. The numbers which should be trained annually are:

	Alberta	Per Million Population	Nationally
Elected Officials	207	86	2219
Emergency Operations Supervisory Personnel	138	58	1496
Rescue Personnel	238	99	2554
Senior Fire Officers	105	44	1135
Senior Police Officers	104	44	1135
Public Information Officers	47	20	516
TOTAL	839	351	9055

3. The relative worth of training in the various areas, going from the highest relative worth - cost, is:

Public Information Officers	4.5
Senior Fire Officers	4.0
Emergency Operations Supervisory Personnel	3.3
Rescue Personnel	3.1
Senior Police Officers	2.3
Elected Officials	1.2

On this basis, should full funding not be available, each 100 reductions in the numbers trained should be divided amongst the positions as follows:

Elected Officials	41
Emergency Operations Supervisory Personnel	12
Rescue Personnel	24
Senior Fire Officers	8
Senior Police Officers	13
Public Information Officers	3

4. There is some potential for reducing the training bill through the organization of individuals who have received training but have subsequently left those positions. Such individuals could be viewed as forming a "reserve" force for emergencies. In addition, there seems to be potential for increased efficiency if the EOP type training for Fire and Police were concentrated at the fire/police training centres; and, if rescue training were combined with the fire training for volunteer firemen. There would still be a need - in fact, an enhanced need - for joint training exercises in each jurisdiction.

5. The significant point to emerge with respect to training methods was a need to increase a proportion of time devoted to exercises.

6. TDG Training

a. Facilities and On-Highways Inspectors - it is recommended that consideration be given to structuring these courses to yield the following proportions of methods:

Formal (classroom)	45%
Exercises	25%
On Job Training (OJT)	30%

Some increased emphasis could be given to legal procedures and on-site actions;

b. TDG Training of Provincial Employees - this training is quite worthwhile; and

c. DG Awareness seems satisfactory as is. Effectiveness in other forms of training could be increased with greater emphasis on action in case of accidents, including use of special equipment.

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(6) APSS Annual Report 1987/88.

APPENDIX A

STUDY DIRECTIVE

SUBJECT

Training Activities Cost-Benefit Analysis

PURPOSE

To analyze the training activities associated with APSS to determine: a) its cost benefit impact; b) gaps or overlap in the activities; and, c) to establish a model for this type of activity including the optimum scale and nature of the various types of training.

TERMS OF REFERENCE

1. Establish the actual scope and content of the training carried out by APSS where the scope is to be determined by the frequency of, and enrollment, in each type of training.

2. The study is to encompass the training given by APSS proper, including that provided by:

   a. The Disaster Services Training Branch*; and

   b. The Dangerous Goods Training Branch*.

3. In addition, the study is to encompass the scope and content of the training given at the Canadian Emergency Preparedness College (federal government), or other outside agencies.

*NOTE: The APSS Training Division has since been reorganized. These two branches were amalgamated into the Training Delivery Branch.

4. The study is to determine both overall and for the individual component training activities:

   a. The cost-benefit of these activities; and

   b. The optimum scale of training of each type which should be given.

5. In addition, the study should determine the nature and scale of such additional training as should be given.

6. The approach and methodology developed for the study should permit its ready application to other provincial settings and to the federal level.

SCOPE

The study should be conducted as far as possible using actual activities and costs as experienced by APSS and by any associated/supporting agencies such as Emergency Preparedness Canada.

The study is to encompass in its consideration of both benefits and costs, the training given not only by the Training Division, proper, but also by other entities such as the Disaster Health Services and Disaster Social Services Branches.

In terms of training format, the seminar/workshop mode will be addressed along with the other means of formal training.

The study, while being as comprehensive as possible, should be completed in about seven months of which no more than seven weeks actual time should be required for the work of the study team.

The two phases of the study are:

Phase 1

1. Setup study team.

2. Review terms of reference, propose amendments if necessary.

3. Establish methodology.

4. Establish study timetable and milestones.

5. Identify sources of information and relevant data. It is envisaged that the preliminary literature review carried out in this first phase will identify - perhaps anecdotally - aspects of training which should be the objects of more precise investigation in Phase II.

6. Review of Phase I results by Steering Group.

Phase II

1. Conduct Study.

2. Prepare and submit report.

ADMINISTRATION

The study team will be composed of:

Team Leader - consultant to be hired by APSS
Investment Analyst - Alberta, if required
Others as needed - access to APSS training personnel

A Steering Committee will be established consisting of a representative from Emergency Preparedness Canada and the Managing Director, Alberta Public Safety Services.

The Study Team will have full access to APSS and EPC College staff, training branches and records and, on request, municipal officials. Interview needs should be made known to APSS as soon as determined so that these can be arranged.

Travel costs, consultant billings should be submitted to APSS (attention Managing Director) monthly.

APPENDIX B

POSSIBLE ADDITIONAL RESOURCES

The percentage of the cases in which is was estimated that "ex-services" personnel would be available to assist:

Elected Officials	61%
Emergency Operations Supervisory Personnel	70%
Rescue Personnel	73%
Senior Fire Officers	66%
Senior Police Officers	43%
Public Information Officers	55%

APPENDIX C

THE TRAINING ACTIVITIES DELPHI EXERCISES

Delphi surveys were conducted in conjunction with this study.

The Delphi survey technique which was used in this study was somewhat different from most opinion studies in that it featured interaction, between the 10 - 50 participants in each component of the worth.

Briefly, the technique was as follows:

a. An initial questionnaire was distributed on which participants are asked to set down estimates as well as the major factors which led to the judgement.

b. Upon completion, surveys were returned in the stamped envelope provided.

c. A statistical summary of the survey results was then prepared. (For example, the average values for the different survey items and the variation in those values, up and down, from this average was shown.) In addition, the arguments leading to the variations were summarized. Typically, these arguments expressed the polar (extreme) positions on a topic. Note that no names were attached to any of the circulated statements. The exercise focused on structured arguments rather than individual views.

d. The resulting summary statement was circulated to participants along with a second copy of the questionnaire. Participants were then asked to consider the validity of the summarized arguments and assessed values and to restate their estimates and the supporting arguments. It should be emphasized that participants were not encouraged to consider the arguments and to make such revisions they believed were warranted in the light of those arguments.

e. Again, the questionnaires were returned and statistics and their summaries prepared and recirculated.

It was generally intended that three cycles would be followed. Because of the rapid convergence experienced, however, (which, incidentally, accords with experience as reported in the literature) the exercise was completed after only two cycles.

APPENDIX D

COURSE LIST

The training in support of emergency planning and operations comprised the following courses:

Rescue Leaders

Municipal Disaster Services Program Management

Emergency Government Preparedness

Emergency Site Management

Public Information Officers

Basic Rescue

APPENDIX E

NUMERICAL CALCULATION NOTES

Note 1: The estimates of the tuition cost which municipalities judged to be equitable for the training of the various officials was as follows:

Emergency Site Management	$450
Municipal Disaster Services Program Management	$325
Rescue Leader	$310
Public Information	$190
Basic Rescue	$150